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THE PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

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ON THE OCCURRENCE OF TWO SPECIES OF *SISYPHUS* IN MAURITIUS, WITH DESCRIPTION OF A NEW SPECIES AND THE DESCRIPTION OF A NEW *ADORETUS* FROM RÉUNION (COL. SCARABAEIDAE)

By J. Vinson, F.R.E.S.

(*Department of Agriculture, Reduit, Mauritius.*)

Sisyphus regnardi Alluaud, 1898, was hitherto the only species of this genus known to occur in Mauritius. The fact that a second endemic species, obviously related to it, also exists in the island appears remarkable, chiefly when considering the particular inland distribution of the two species. An important feature is that one of the species has undergone a considerable reduction of the hind-wings and is flightless.

The *Sisyphus* of Mauritius are typically highland-inhabiting forms restricted to the moist forests. They seem to be very sensitive to certain ecological factors such as high humidity, low temperature and probably also nature of the soil, conditions which are only found in the uplands of the island or on the slopes of certain mountains. These localities are often enveloped in clouds and mists and are subjected to a high rainfall (125–175 in. per annum) while the relative humidity varies from 80 to 90%. It has been noticed that these insects never live at altitudes less than 1700 ft. nor on mountains which for some reason are relatively dry (for instance the Corps-de-Garde, 2358 ft.)

Sisyphus regnardi only lives on the Pouce mountain (2661 ft.) in the north-west of Mauritius, where it is found from 1700 to 2400 ft. and over an area of about one-quarter square mile or 160 acres.

Sisyphus vicinus sp. n. has a wider range. It has been observed on the inner slope of the extinct crater known as the " Trou-aux-Cerfs " (2000 ft.), near the " Maccabé " forest (1800–2000 ft.) and at about 1800 ft. in the neighbourhood of the " Bassin Blanc," another extinct crater. These three localities, four to ten miles apart, are all situated on the same higher plateau delimited by the 1800 ft. contour line in the south-western part of the island. It is in this upland block, of an area of about 38 square miles or approximately 24,300 acres, that the largest patches of indigenous thicket still exist.

The Pouce mountain is eight miles distant from this south-western plateau, from which it is separated by a lower plateau the maximum elevation of which is 1400 ft. This lower plateau, which was originally under moist forest, was gradually cleared with the colonisation of Mauritius, so that in the year 1872 the mountain range including the Pouce had been completely isolated by cultivated lands from all the parts of the island still under indigenous vegetation. It is needless to add that such an isolation is far too recent to be reckoned here as an evolutionary factor. But it is quite obvious that the two species concerned are living in two stations which must be considered as being " closed," in spite of the relatively short distance between them. It would appear, therefore, that altitude, or rather its meteorological consequences, are the mechanism of isolation of the two populations. This isolation is rendered more complete by the fact that *Sisyphus regnardi* is flightless, its hind-wings being vestigial. Consequently individuals of its population being never on the wing are not liable to be swept easily by wind to meet the *S. vicinus* population and to interbreed with it. On the other hand, *S. vicinus* has the power of flight, its hind-wings being fully developed, but even if eventually

swept by wind its chances of meeting the *S. regnardi* population appear exceedingly small since this species occupies only a very limited area on a mountain cone. If in the past a few intermittent exchanges have taken place between the two populations, with interbreeding, the entity of the two species has not been affected, possibly owing to selection pressure upon the highly complex genetic mechanisms.

As regards the cause of reduction of the hind-wings in one of the species, the problem appears to be even more obscure. According to some recent writers on the subject, such as Miss D. J. Jackson,[1] flightlessness in beetles is of mutational origin and is not the direct effect of environment: restricted environment may have only favoured the preservation of species already apterous or with vestigial wings. This explanation, however, does not appear very satisfactory for the particular case under consideration, since of two evidently allied species the one restricted to an exposed mountain cone is flightless whereas the other distributed over a much wider plateau is fully winged. It would seem that the older idea fits more aptly: namely, that the reduction of the wings may be caused by the direct influence of environment, flightlessness being considered a positively advantageous condition in the preservation of species living on exposed mountains or in restricted areas (flying insects being much more liable to be blown away to the sea or to unsuitable areas).

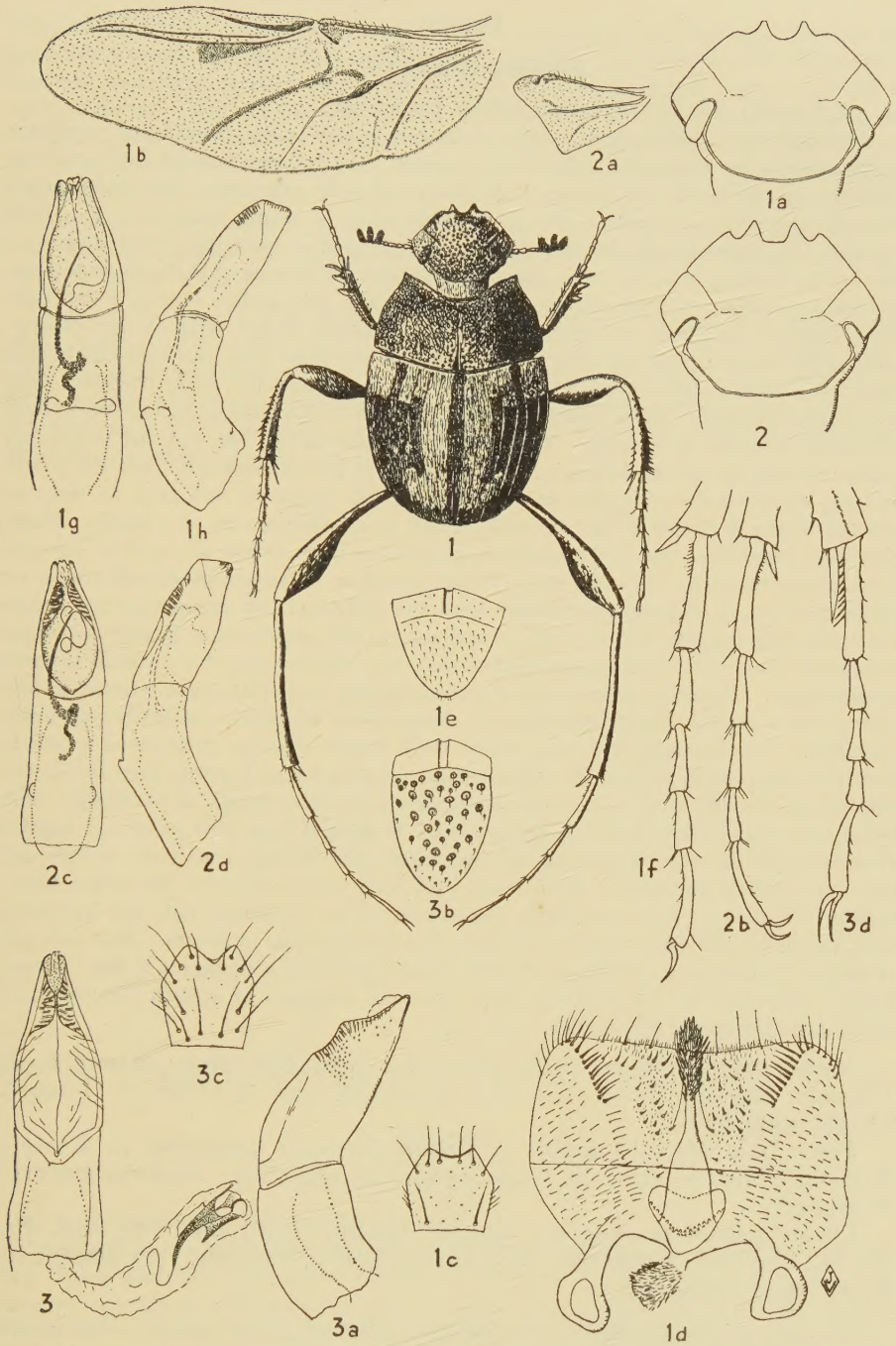
Little is known about the biology of the two Mauritian *Sisyphus*. The adults have been observed feeding on animal excreta and it is probable that the eggs develop in small pellets of dung, as in the other members of the genus. It is chiefly on monkeys' excreta that the beetles are seen but they will probably feed also on birds' excreta. I have kept a few adults on fowl excreta for several weeks but could not obtain oviposition. On the Pouce I have even seen a few *Sisyphus* attracted by a decomposing mollusc. In the same place I have captured several examples under stones where they were probably sheltering.

It may be useful to note that the monkey occurring in Mauritius is *Macacus cynomolgus* (Linn.), an Indian species which is believed to have been introduced in Mauritius by the Portuguese in 1528.

In connection with the description of the following new species, I wish to express my thanks to Dr. R. Paulian, who has been kind enough to compare the material communicated to him with the type of *Sisyphus regnardi* Alluaud in the Muséum d'Histoire naturelle, Paris. He has also sent me a series of the Indian *S. longipes* Ol., the nearest ally to the Mauritian species. With reference to the *Adoretus* species, Dr. Paulian has favoured me with many useful bibliographical notes on the species hitherto known from Réunion and on the material from that island in the Paris Museum.

[It should be made clear that no species of *Sisyphus* is known from the other Mascarene Islands, Réunion and Rodriguez, nor from Madagascar, nor the Comoros, nor the Seychelles. In the copy of Gillet's Catalogue of Coprinae (1911, *Coleopt. Cat.*, **38** : 22–25) at the British Museum (Natural History), a copy with manuscript additions to date by Mr. G. J. Arrow, 44 species are listed, *S. vicinus*, in this paper, making the forty-fifth. One is european and mediterranean, one is central-american, eleven are asiatic (mainly tropical), thirty are recorded from various parts of tropical and south Africa, and the remaining two are the Mauritian species discussed in this paper.—H. Scott.]

[1] 1928, *Trans. Roy. Soc. Edinb.* **55** : 665–735, pls. I–VII; see also comments by Dr. Hugh Scott, 1933, *Trans. linn. Soc. Lond.* (Zool.) **19** : 344.



FIGS. 1–3.—1. *Sisyphus vicinus* sp. n.; 1a, head; 1b, hind-wing; 1c, mentum; 1d, epipharynx; 1e, pygidium; 1f, hind tarsus; 1g, aedeagus, dorsal view; 1h, aedeagus, side view;—2. *S. regnardi* Alluaud, head; 2a, hind-wing; 2b, hind tarsus; 2c, aedeagus, dorsal view; 2d, aedeagus, side view;—3. *S. longipes* Ol., aedeagus, dorsal view; 3a, aedeagus, side view; 3b, pygidium; 3c, mentum; 3d, hind tarsus. (Figs. 1, 1b, 2a, are drawn to scale.)

Coprini.

Sisyphus vicinus sp. n.

♂♀. Length: 3·4–4·4 mm.; max. width: 2·0–2·7 mm.

Brownish-black, rather shiny, with a violaceous bronzy lustre on head and pronotum, elytra more or less variegated with yellow; convex. Head, pronotum and elytra glabrous with the exception of a few hairs on the frons and some extremely short rudimentary hairs on the elytral interstices only just visible under a certain light at × 30. *Head* strongly and rather closely punctured, punctation limited at back just before neck by a fine border starting from the eyes; clypeus bidentate, the bottom of the incision between the teeth rounded; mentum slightly emarginate at tip, with surface bearing a few short setae (eight). *Pronotum* strongly punctured, punctation rather strigate and oblique, median part more or less narrowly impunctate half-way from base, this impunctate area with a fine stria deeply impressed at base; base, apex and sides finely bordered, sides impunctate laterally. *Elytra* rounded behind, variegated with more or less obscure yellow, coloration arranged as follows: 1st interstice brownish-black, 2nd and 3rd completely yellow, 4th and 5th yellow at base and at apex, 6th completely brownish-black, 7th yellow at base, all remainder of elytron brownish-black; 7th interstice very large at base, on account of the deviation of the 6th stria, where it is rather convex as a callus. Striae punctate; interstices minutely punctured, punctation more or less arranged in rows on each side of the striae, *i.e.*, two rows in each interstice. Microsculpture well visible on elytra at × 30, in isodiametric meshes; head and pronotum not microsculptured above. *Underside* with mesosternum not very densely punctured, metasternum densely punctured with oval punctures; meso-metasternal suture very slightly angled at middle towards mesosternum. *Pygidium* punctured and pubescent, the part of the base covered by the elytra with a median longitudinal groove. Front *tibiae* tridentate externally and finely crenulate. Posterior legs very long, about twice length of body, their tarsal segments relatively long, chiefly III and IV which together are longer than I, proportions as follows: 100, 67, 57, 50, 83; tibial spur rather short, about one-third length of basitarsus; hind tibiae somewhat twisted near middle, gradually broadened from that point and slightly arcuate to the tip, their surface smooth externally, not bearing denticulate carinae and only very slightly pubescent. Middle and hind coxae microsculptured but rather superficially. *Hind-wings* fully developed. Secondary sexual characters not very apparent, hind femora in male being only very slightly more swollen than in female. Male *aedeagus* as figured, containing a sclerotised whip-like thread probably homologous to the "Spiral-Faden" described by Dr. Walther Horn from the aedeagus of certain CICINDELIDAE (1932, *Livre Centenaire Soc. ent. Fr.*: 197–198).

MAURITIUS: Trou-aux-Cerfs (2000 ft.), 9.xii.1933 (*Ray. Mamet & J. Vinson*); Maccabé forest (1800 ft.), 20.xii.1937 and 13.i.1938 (*J. Vinson*). Several examples.

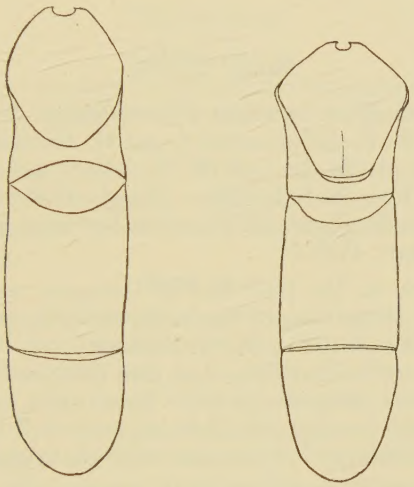
Type, from Maccabé forest, in British Museum; paratypes in Muséum National d'Histoire naturelle, Paris, and in my collection. Material studied: 20 examples.

Closely related to *Sisyphus regnardi* Alluaud (1898, *Bull. Soc. zool. Fr.* **23**: 64), also from Mauritius. *Sisyphus regnardi* is, however, very distinct by the following characters:—

The head, pronotum and elytra are strongly pubescent, the clypeus is rather quadridentate and the bottom of the incision between the median teeth is not rounded as in *vicinus* but is straight. In *regnardi* the hind-wings are vestigial, the elytra are unicolorous and the relative proportions of the tarsal segments in the hind legs are somewhat different, being: 100, 60, 53, 47, 77. The aedeagus of the two species look rather similar, the

difference being that in *regnardi* the parameres are developed into two slight flaps on the upperside whereas in *vicinus* there appear to be no flaps. It is possible that in the genus *Sisyphus* this organ is built on a uniform type, with slight specific variation which is mostly internal. Even in an exotic species such as *S. longipes* Ol., of southern India, the aedeagus, although obviously distinct, does not differ considerably from those of the two Mauritian species. Amongst the differences it will be seen that in *longipes* the basal piece is proportionately shorter; in the two males I have dissected, the internal sac was in both cases found protruding outside the basal piece, bearing with it the " Spiral-Faden." In *vicinus* and *regnardi* the internal sac was always found inside the aedeagus with the " Spiral-Faden " fixed in a definite position, as figured.

Sisyphus longipes Ol. is the described species nearest to the two Mauritian forms, from which it differs by its larger size (4·5–5·5 mm.), cordiform elytra, convex and only superficially punctate pronotum, ocellate punctation of all the body, shorter hind legs with the tibiae carinate and more arcuate, relative lengths of their tarsal segments (100, 43, 43, 37, 77), and many other characters. The hind-wings of *S. longipes* are fully developed and its head, pronotum and elytra are pubescent.



FIGS. 4–5.—4. *Adoretus borbonicus* sp. n., aedeagus; 5. *A. femoratus* Lap.-Cast., aedeagus.

Rutelini.

Adoretus borbonicus sp. n.

♂. Length: 13 mm.; max. width: 6·5 mm.

Oval, rather widened posteriorly, slightly convex; reddish-brown, shiny, surface not very closely punctate, with short scale-like yellowish hairs, rather procumbent. *Head* punctate throughout; between the coarse punctures which bear the hairs a much finer punctation is present, visible at × 30; clypeal suture well marked. Eyes not very prominent. Maxillary palpi with last segment not swollen and much longer than penultimate. *Pronotum* punctate as head, with minute punctures intermingled with the coarse ones, the latter bearing the hairs. Posterior angles obtuse, rather sharp. *Elytra* with the usual strial carinae very feebly indicated, except near base where they are more

visible. Punctation umbilicate; the pubescence is not borne by the punctures as on head and pronotum but is placed close to them; punctures confluent in some places. *Underside* yellowish-brown, sparsely pubescent. *Antennae* and *legs* testaceous with the tarsi darkened, especially the hind ones, hind tibiae reddish-brown; larger claw of the front and median tarsi distinctly cleft. Aedeagus as figured.

Réunion (Bourbon): Plaine des Cafres (5200 ft.), 10.xii.1937 (*Miss J. Pitot*). Holotype, in my collection.

Closely allied to *A. femoratus* Lap.-Cast., of Mauritius. More rufous, more shiny, elytral carinae less visible, eyes smaller, hind tibiae and tarsi lighter in colour, aedeagus much less widened at distal part.

Book Notice.

Die Zoocecidien durch Tiere erzeugte Pflanzengallen Deutschlands und ihre Bewohner. Von E. H. Rübsaamen † und H. Hedicke. Siebente Lieferung pp. 265–296, pls. 24–29, figs. 68–77, 1938. Achte Lieferung pp. 297–328, pls. 30–35, figs. 78–102, 1938. Neunte Lieferung pp. 329–350, pls. 36–42, 1939. 4to, Stuttgart (E. Schweizerbart'sche Verlagsbuchhandlung) Zoologica, Stuttgart, Heft 77.

Rübsaamen's work on the Gall flies of Germany was unfortunately not completely published at the time of his death, but a successor able and willing to continue the work was found in Dr. H. Hedicke.

The second volume (Cecidomyiden und ihre Cecidien) commenced publication in 1926 and is now (1939) completed. There was a break during the years 1926 to 1938. Volume 2 comprises Lieferungen 5–9 of the whole and has 42 coloured plates. Lieferungen 7–9 continue the keys to species started in earlier parts, but owing to financial considerations it is stated that with the abbreviated conclusion of the Cecidomyidae the publication of the work will be concluded.

The coloured plates depict the gall fly and the gall it causes on the plants it affects. A title-page to Volume 2, an index to genera and explanations to the plates completes Lieferung 9.

The whole is issued as Heft 77 of Zoologica, Stuttgart.

ON FIVE GENERA IN THE LEPIDOPTERA RHOPALOCERA AT PRESENT WITHOUT VALID NAMES

By Francis Hemming, C.M.G., C.B.E., F.R.E.S.

The following notes have been made in the course of recent revisional work on the generic names of the Rhopalocera :—

Nymphalidae.

Lelecella gen. n.

Generic characters.—I select as the generic characters of *Lelecella* Hemming the characters given by de Nicéville for *Lelex* de Nicéville, 1900 (*J. Asiat. Soc. Beng.* Pt. 2, **78** : 234).

Type : *Lelecella limenitoïdes* (Oberthür, 1890) (= *Vanessa limenitoïdes* Oberthür, 1890).

The name *Lelecella* Hemming is proposed, because *Lelex* de Nicéville is invalid, being a homonym of *Lelex* Rafinesque, 1815 (*Analyse* : 108).

Hesperiidae.

Cyrina gen. n.

Generic characters.—I select as the generic characters of *Cyrina* Hemming the characters given by de Nicéville for *Creteus* de Nicéville, 1895 (*J. Bombay nat. Hist. Soc.* **9** : 385).

Type : *Cyrina cyrina* (Hewitson, 1876) (= *Hesperia cyrina* Hewitson, 1876).

The name *Cyrina* Hemming is proposed, because *Creteus* de Nicéville is invalid, being a homonym of *Creteus* Westwood, 1852 (*in* Doubleday, *Gen. diurn. Lep.* (2) : 511).

Meza gen. n.

Generic characters.—I select as the generic characters of *Meza* Hemming the characters given by Holland for *Gastrochaeta* Holland, 1894, when he dealt with this genus in 1896 (*Proc. zool. Soc. Lond.* **1896** (1) : 37).

Type : *Meza meza* (Hewitson, 1877) (= *Hesperia meza* Hewitson, 1877).

The name *Meza* Hemming is proposed, because *Gastrochaeta* Holland is invalid, being a homonym of *Gastrochaeta* Dujardin, 1841 (*Roret's Suite à Buffon, Infusoires* : 384).

Naevolus gen. n.

Generic characters.—I select as the generic characters of *Naevolus* Hemming the characters given by Godman for *Cydrus* Godman, 1900 (*in* Godman & Salvin, *Biol. cent.-amer. Lep.-Rhop.* **2** : 512).

Type : *Naevolus naevolus* (Godman, 1900) (= *Cydrus naevolus* Godman, 1900).

The name *Naevolus* Hemming is proposed, because *Cydrus* Godman is invalid, being a homonym of *Cydrus* Billberg, 1820 (*Enum. Ins.* : 81).

Remella gen. n.

Generic characters.—I select as the generic characters of *Remella* Hemming the characters given by Godman for *Perimeles* Godman, 1900 (*in* Godman & Salvin, *Biol. cent.-amer. Lep.-Rhop.* **2** : 542).

Type : *Remella remus* (Fabricius, 1798) (= *Hesperia remus* Fabricius, 1798).

The name *Remella* Hemming is proposed, because *Perimeles* Godman is invalid, being a homonym of *Perimeles* Lenz, 1831 (*Naturg. Säugth.* : 158), an emendation of *Perameles* Geoffroy, 1803 (*Bull. sci. Soc. Philom., Paris* **80** : 150).

A NEW BLATTID FROM TANGANYIKA (*CALOLAMPRA ARBORIFERA* SP. N.) (ORTHOPTERA, BLATTIDAE)

By Dr. R. Hanitsch.

(Communicated, with a note on its copulation, by E. Burtt, F.R.E.S.)

Calolampra arborifera sp. n.

♂. Head exposed; occiput fuscous, vertex and face cream-white, a large shining black blotch extending from eye to eye and ventrally to the middle of the face where it partly forks; palps short, proximal segments fuscous, the two terminal ones deep castaneous; antennae with base testaceous, remainder fuscous. Pronotum nearly one and a half times as broad as long, front margin rounded, hind margin produced; with faint transverse striations near either margin; disk with symmetrical black markings, viz. a pair of longitudinal black streaks, in front branching off to either side, and three pairs of smaller black marks grouped at either side of the posterior end of the longitudinal streaks; the whole of the pronotum, except in the extreme lateral regions, with closely packed shallow black punctures; posterior border with a series of indistinct black spots. Tegmina exceeding the abdomen by twice the length of the cerci; mediastinal area pale testaceous, bordered on the outside by a narrow black line, fading away distally, on the inside by a shorter, but much broader black streak; rest of the tegmina dark testaceous, with numerous fuscous blotches in their proximal half, fewer distally; mediastinal vein with three indistinct branches; radial vein in its proximal course with five simple costals, just beyond the middle breaking up into seven branches; ulnar vein seven-ramose, cross-venules strongly marked; anal sulcus extending to three-fifths of the posterior margin, nine anals, the central ones regular, the lateral ones in part irregularly ramose. Wings fuscous, with central portion of costal area light testaceous; mediastinal vein very long, reaching nearly to the apex of the wing, with about five indistinct branches; radial vein dividing at three-fifths from the base, its four branches going to the apex of the wing; median vein simple; ulnar vein with four complete and five incomplete branches; no apical triangle. Abdomen above fuscous. Supra-anal plate semi-circular, faintly emarginate, base with a large piceous blotch, remainder testaceous. Cerci pale testaceous. Abdomen below very pale testaceous. Sub-genital plate two-thirds as long as broad, asymmetrical, with a slight emargination on the right; styles very short, conical, pale testaceous, situated on either side at the base of the sub-genital plate. Legs very pale testaceous, with spines reddish-brown; front femora with three spines near centre of lower margin; mid and hind femora with two spines each, and each femur with a genicular spine (broken off on left front femur and left mid femur?); tibiae strongly armed with three rows of spines; posterior basitarsus in length one and a half times that of the remaining segments combined, entirely spined; first segment armed, remainder unarmed; tarsal claws symmetrical, arolia present.

♂. Total length 19 mm.; pronotum 4·1 × 5·8 mm.; body 17 mm.; tegmina 15·5 mm.

♀. Apterous. Sub-elliptical in outline, greatest width between third and fourth abdominal segments. Head freely exposed; vertex and face testaceous, the latter with a large castaneous blotch extending from eye to eye, and continued downwards nearly to the clypeus; maxillary palps castaneous; antennae with base dull testaceous, remainder fuscous. Pronotum with anterior margin parabolic, posterior margin faintly rounded; reddish testaceous, disk finely mottled with fuscous, with a lighter median streak and a

darker blotch on either side at the front of the disk; a row of about 18 black spots along the hind margin. Mesonotum, metanotum and tergites dark rufo-testaceous, finely mottled with fuscous, each with a row of black spots along the posterior margin. Supra-anal plate twice as broad as long, posterior margin faintly emarginate. Cerci nearly as long as the supra-anal plate, pale orange. Abdomen below shining dark castaneous, centre somewhat lighter. Legs testaceous; front femora along the inferior margin with three spines each, mid and hind femora with two each; front femora in addition with one genicular spine each, mid and hind femora with two each; tibiae strongly armed, spines reddish testaceous, in three rows; posterior basitarsus one and a half times as long as the remaining segments combined, entirely spined; first tarsal segment spined, remaining segments unarmed; claws symmetrical, arolia present.

♀. Total length 17 mm.; pronotum : length 5 mm., greatest width 9 mm.

Fig. 1.—*C. arborifera* sp. n. pronotum.

Holotype ♂; allotype ♀; taken *in copula*; Shinyanga, Tanganyika, 31.xii.1936 (*E. Burtt*).

Presented by the captor to the University Museum, Oxford.

In 1930, *Ann. Mus. civ. Stor. Nat. Genova* **55** : 19–21, notwithstanding some slight differences, I recorded and redescribed a Blattid ♂, from Akek, near the Webi Shebeli, under the name *Calolampra* (*Epilampra*) *pardalina* (Walker), which Dr. Uvarov had very kindly compared with the type from Lake N'Gami, Central Africa. Rehn, in 1922, *Ann. Transvaal Mus.* **9** : 35, recorded the same species from two localities in the Transvaal, regarding at the same time as synonymous *Calolampra aptera* Schulthess-Schindler (Somaliland and Kilimanjaro), the description of which had been based upon the female only.

Dr. Uvarov has placed me under further obligation by having compared also the present material from Tanganyika with the type of *C. pardalina* (Wlk.). He informs me that the type differs from it by having " the pronotum relatively much broader, lighter in colour, without a dark sub-marginal line; elytra much lighter in colour, without the black sub-costal line; wings hyaline; supra-anal plate emarginate; anterior tibiae shorter, distinctly inflated." I therefore think myself justified in regarding the present species as hitherto undescribed.

Note by E. Burtt.

As I stepped out of my house at Shinyanga, about dusk on 31 December 1936, I was interested to note some small dark object careering about very rapidly on the gravel. The light was uncertain and the object moved so fast that at a casual glance I took it to be a small Solpugid searching for its prey. On closer inspection the object resolved itself into a pair of cockroaches *in copula*. The pair was being followed most assiduously by two other males which kept making rapid darts at them in an effort to oust the successful male, and it was in attempting to escape their attentions that the pair were darting rapidly about hither and thither and had thus attracted my notice.

Book Notice.

Festschrift zum 60 *Geburstag von Prof. Dr. Embrik Strand.* Vol. IV. 8vo. Riga, 1938. pp. 784, 16 pls., 203 figs.

This volume contains 27 articles of which 13 are entomological in interest and many more are concerned with Spiders or Arachnids.

The papers are of varying length, that by Dr. Breuning on new Cerambycids extends to well over 100 pages.

The publication of a fifth, and last, volume is announced. It will include a complete index to the 5 volumes of the " Festschrift."

Book Notice.

Catalogus Lepidopterorum regionis palaearcticae. Verlag O. Staudinger and A. Bang-Haas. Lieferung 7 (pp. 97–112) 1938; Lieferung 8 (pp. 113–128) 1939.

The general description of this work has already been given in this magazine. The 2 parts here to be noticed are concerned with the Heterocera and comprise the Agaristidae and Agrotidae. The latter family is listed to genus *Apamea*. As in earlier parts prices are quoted for such species, or subspecies, as are available from Messrs. Staudinger and Bang-Haas.

Book Notice.

The insects of North Carolina. By C. S. Brimley. 8vo. Raleigh, N.C. (North Carolina Department of Agriculture, Division of Entomology). 1938. pp. 560.

This work is an annotated list of all insects, arachnids, myriapods and land and fresh-water Crustacea recorded for North Carolina. It lists a grand total of 10,204, of which 9566 are true insects. It is estimated that this total is rather less than one-half the species represented in the State.

The list is systematically arranged under genera, and gives for each species the distribution as at present known, the times of appearance and the situations where the species has been found. In some cases an estimate of the abundance of the species is given.

A NEW SPECIES OF PHORIDAE (DIPTERA) ASSOCIATED WITH MILLIPEDES, FROM THE YEMEN

By the Rev. Fr. H. Schmitz, S.J.

(*Ignatiuskolleg, Valkenburg (Lbg.), Holland.*)

Communicated by Hugh Scott, Sc.D., F.R.E.S.

[Introductory Note.—The species described below was discovered during the recent British Museum (Natural History) Expedition to South-Western Arabia.

The Phorid flies were first noticed by Mr. E. B. Britton. They were riding on a large black millipede which was crawling slowly on a path close to the ancient city of Ta'izz in southern Yemen, at an altitude of 4500 feet, on 23rd December, 1937. The time was between 4 and 5 p.m. and the path was in shadow. The millipede (not preserved) was not, apparently, dirty or covered with any substance attractive to the flies. I remained until I had collected six of the flies, which, when disturbed, flew off the millipede but persistently returned. The case is evidently one either of phoresy or of parasitism, and Father Schmitz has given below his reasons for believing the Phorid to be, in its early stages, an endoparasite of the millipede.—Hugh Scott].

Megaselia (Aphiochaeta) equitans sp. n.

A medium-sized species; with one long mesopleural bristle; nearly related to *M.* (*A.*) *elongata* (Wood) (Europe), but of yellowish-red colour and with four scutellar bristles in both sexes.

♂. *Head*: frons broader than high (4 : 3, but varying somewhat), reddish, often extensively stained with brown, dull or very slightly shining, with short pubescence and strong black bristles. The middle row of bristles nearer the upper than the lower row. Supra-antennal bristles small and unequal: the lower pair are only minute hairs, very close to the upper and not, or only slightly, nearer together, sometimes entirely wanting. Upper supra-antennals approximate, of half the size of the other frontal bristles. Antial bristles in about the middle between the middle line and the inner eye-margin, subparallel, directed backwards. Anterolateral bristles a little higher than the upper supra-antennals. Middle row of bristles not equidistant, the preocellar pair being more approximate. Third antennal segment of normal size, reddish with the apex darker. Arista of ordinary length, with very short pubescence. Palpi not long, about one and one-half longer than broad, yellow, with 5 or 6 short but stout bristles on the outer half. Cheeks with two hair-like bristles. *Thorax* reddish, with yellowish-brown pubescence. Scutellum with four bristles of equal length. Pleura yellow, mesopleura hairy, with one very long bristle (longer than the frontal bristles). *Abdomen* somewhat long, broadest at second segment (which is a little elongate), tapering behind, yellowish-red, generally with third and fourth segments black, but less dark (to reddish) along the middle; hind margin of first segment and posterior half of second brownish to blackish. Fifth and sixth segments reddish, sometimes more or less infuscated. Venter yellow. The abdomen is sparingly haired, the hairs along the hind margins of the segments are not longer than the others, except on the sixth segment and at the sides, as usual. At the sides of the second segment there are 2–3 rather longer hairs. Hypopygium of normal size, nearly as long as high, brown or blackish, dull, sparingly haired, without bristles. Ventral plate large, reaching far behind, nearly to the end of the upper part. Anal tube large, as long as the hypopygium itself and fairly high, with well-developed terminal hairs, yellow. *Legs* entirely yellow. Front tarsi rather slender. Hind femora broadened as usual, not darkened at the end, ventrally on the anterior half with 4–5 long hairs. Hind tibial bristles distinct, not numerous; from the beginning of the second quarter

there are 7–9 visible. *Wings* (see figure) distinctly yellowish. Costa not reaching the middle of the wing (0·46), costal divisions about 16 : 9½ : 4; costal cilia short. Fork not large, with the angle rather acute. Fourth vein issuing behind the base of the fork, evenly curved. *Halteres* yellowish-red, not rarely strongly infuscated. *Length* 1·7–1·9 mm.

♀. Similar to the ♂, but a little darker; frons brownish, abdominal tergites brown. Frons perhaps less broad, third antenna segment small, palpi scarcely as long as in the ♂ and with the bristles a little longer, proboscis ordinary. Sixth abdominal segment elongated as in *M.* (*A.*) *elongata* (Wood) ♀; as in that species, it has longish bristly hairs all round the hind margin. Of the ovipositor, which is without doubt constructed mainly as in *M.* (*A.*) *elongata*, only the extreme tip is visible and this is quite of the same shape as in *M.* (*A.*) *elongata*, compressed laterally. Hind femora less broad than in the ♂, first costal division scarcely longer than the other two together. Length 1·75 mm.

Fig. 1.—*Megaselia equitans*, wing.

Described from 5 ♂♂ (holotype and four paratypes), 1 ♀ (allotype), collected in Yemen : Ta'izz, *c.* 4500 ft., 23.xii.1937 ; they were running about on a large living millipede which was crawling on a path (*Scott* and *Britton*). All specimens in the British Museum collection, except one paratype in coll. Schmitz.

Judging from further information from Dr. Hugh Scott (contained in a letter from Dr. F. W. Edwards to me) the association of the Phorid, described above, with the millipede, was not one of chance, for even when the flies were repeatedly driven away from the millipede, they immediately came back again. It must have been a case either of phoresy or of parasitism.

In fact, phoresy with myriapods has already been observed in Africa; but in this case the Diptera on the millipedes were not Phoridae, but Borboridae (E. Roubaud, 1916, " Nouvelles observations de phorésie chez les Diptères du groupe des Borboridae ", *Bull. Soc. zool. France* **41** : 43). Also in the case observed by Dr. Scott, the fact that most of the Phorids were males would indicate phoresy. For among the parasitic Phoridae it is almost always only the females which seek out and pursue the host. In the case of ants this fact is very noticeable.

Nevertheless, I believe that the Phorids discovered by Dr. Scott are true parasites of myriapods. For *Megaselia equitans* is morphologically very closely related to two other species of the same genus and subgenus, namely, *Megaselia juli* (Brues) and *M. elongata* (Wood), both of which are parasites of myriapods.

As to *Megaselia juli*, another yellow species, from North America, there is not the slightest doubt that it is an endoparasite of myriapods, as, for example, *Spirobolus marginatus* Say. All the references to the literature on that subject are to be found in an article by Frederick Knab : " Some earlier observations on the habits of *Aphiochaeta juli* Brues " (1913, *Insec. Inscit. Menstr.*

1 : 24). The parasitism of *Megaselia elongata* (Wood) (Europe) is proved by the observations of F. Picard : " Sur le parasitisme d'un Phoride (*Megaselia cuspidata* Schmitz) aux dépens d'un Myriapode " (1930, *Bull. Soc. zool. France* **55** : 180–183). *M. cuspidata* Schmitz is a synonym of *M. elongata* (Wood), as I have lately recognised by the comparison of typical specimens.

To the same group and within the same subgenus *Aphiochaeta*, of which the species *juli*, *elongata*, and *equitans* form part, belongs yet another, a very rare European species, *Megaselia* (*Aphiochaeta*) *pungens* (Lundbeck). The female of this species remains as yet unknown. One could even now safely say that it will be found to be an endoparasite of myriapods.

DISCOVERY OF A NEW GALL-WASP IN BRITAIN (HYMEN. CYNIPIDAE)

By M. Niblett.

DESCRIPTION

By Dr. H. Hedicke.

Communicated by G. J. Kerrich, F.R.E.S.

While searching for Lepidopterous larvae at Burnham-on-Crouch, Essex, on 31st March, 1934, a friend, Mr. S. Wakely, noticed some small larvae in cells in some of the stems he had cut open and, thinking they might be of some interest to me, very kindly collected a number of stems. The larvae proved to be Cynipid, and I awaited with some interest the emergence of the imagines. The identity of the plant was in doubt, as it was not an easy matter to determine it from pieces of old dead stem. I sent some of the stems to the Royal Botanic Gardens, Kew, and received them back with a note from the Director to the effect that they had been identified as *Picris echioides* L., a plant with which I was not very familiar. I have found the plant since in several localities in Surrey, but in no instance has it contained any galls.

The first emergence occurred on 12.vi.34, when two gall-wasps emerged, followed by (9) 15.vi.34, (7) 20.vi.34, (2) 22.vi.34, (4) 25.vi. 34, (1) 28.vi.34, (1) 2.vii.34. In addition three Chalcids (Pteromalidae) emerged 10.vii.34.

Not being able to find any record of *Picris echioides* L. as the host-plant of a Cynipid, I sent specimens to Mr. G. J. Kerrich, who replied that it was his opinion that it was a species new to science and suggested that I should submit them to Dr. H. Hedicke. Dr. Hedicke very kindly examined the specimens and pronounced them to be of a new species. His description of the insect is given at the end of this paper.

The following year (1935) I was provided with more material from the same source, and from this I bred another series of insects. The first emergence was on 23.vi.35, and was a Chalcid : a number of these emerged during June and July, the latest date being 13th July. The gall-wasp emerged freely in June and, curiously enough, the first emergence, 12.vi.35, coincided with the first in 1934; while the last, 3.vii.35, was a day later than that of the previous year.

I should like to take this opportunity of thanking all those whose kind assistance has enabled me to put this new species on record.

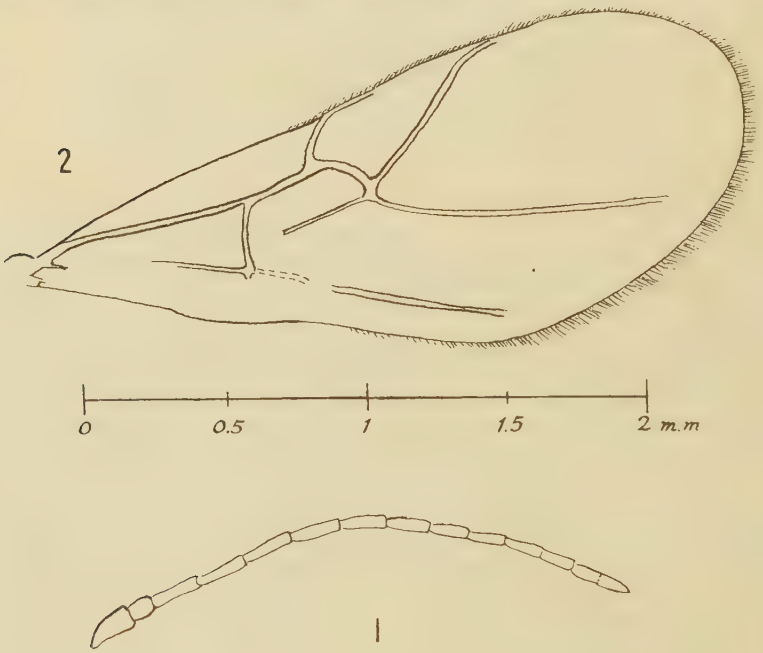
Description of the Gall.

The gall (of which there is no indication from the outside) consists of an ellipsoidal cell in the pith of the stem of *Picris echioides* L. The longer axis of the gall lies in a plane with the major axis of the stem; it is similar to the gall caused by *Phanacis centaureae* (Kalt.) in the stems of *Centaurea* spp., but is slightly larger: length 2·5 mm. The adult insect makes its exit through a hole bored in the stem-wall. In stems in which a large proportion of the pith has disappeared the cells containing the larvae appear to retain a certain amount of pith around them, giving an impression that an area beyond the wall of the cell is affected by the larvae.

Aylax caulicola sp. n. ♀.

[Description by Dr. H. Hedicke translated from the German by G. J. Kerrich.]

Black; antennae brown, apically darkened, first and second segments black; mandibles red-brown, apically black; wing-veins brown; legs brown, with coxae and trochanters



Figs. 1–2.—*Aylax caulicola* sp. n. 1, antenna; 2, fore-wing.

black, with femora usually largely darkened to black. *Head* and *thorax* very shortly and finely white-pubescent; pleura and propodeum more strongly and in part more densely hairy. Head broader than high: frons and vertex very finely leathery-rugose. Antennae (fig. 1) fourteen segmented; the two apical segments sometimes coalesced; segments 3 and 4 equal in length. Thorax including scutellum leathery-rugose, with only the perpendicular sides of the scutellum partly smooth and shining. Notaulices very well-marked, not quite percurrent: median furrow often almost reaching the fore margin of the mesonotum. Scutellum with basal pits flat-bottomed, leathery-rugose, sometimes indistinctly separated; dorsally with a shallow median furrow, sometimes indistinct or absent. *Wings* (fig. 2)

finely hairy and ciliated: radial cell distinctly closed at base of fore margin, about twice as long as broad: areolet absent: cubitalis almost reaching apex of wing. *Abdomen* as long as head and thorax together, laterally compressed, about one and a half times as high as thick: its surface smooth and shining, the last two tergites very finely punctate.

Length 2–2·4 mm.

Described from twenty-two females. Holotype and eight paratypes in coll. Hedicke, thirteen paratypes in coll. Niblett.

The leathery sculpture of the thorax relates this species to *A. serratulae* (Mayr); but in the latter the notaulices are not shortened anteriorly, the radial cell is entirely open, and the wings are ciliated.

A NEW SPECIES OF THE GENUS *CHILO* (LEP., PYRALIDAE)

By G. A. Bisset, B.Sc., F.R.E.S.

The species described below was bred from sugar-cane in Gurdaspur in the Punjab in August 1936, nine specimens being sent for identification. It agrees in all given characters defining the genus *Chilo* Zinck., and belongs to that genus according to the key to the Crambinae provided by Hampson (1895, *Proc. zool. Soc. Lond.* **1895**: 931). The genitalia, however, differ considerably from those of the species examined belonging to that genus, and I feel uncertain of its true position.

Figures of the genitalia of two of the commonest pests belonging to the genus, neither of which has been figured previously, are given for comparison. The main points to notice are the differences in the saccus, the aedeagus and the anellus.

1. *Chilo suppressalis* Walker 1863 = *simplex* Butler 1880 figs. 1 and 2.
2. *Chilo zonellus* Swinhoe 1884 = *partellus* Swinhoe 1885 figs. 3 and 4.
3. *Chilo trypetes* sp. n., figs. 5 and 6.

Chilo trypetes sp. n.

♂. 25–27 mm. Dorsal and lateral surfaces of the palpi, thorax and abdomen, and the upper surface of the fore-wing light drab, mixed with dusky brown scales. Termen of fore-wing with seven darkish spots between the veins. Under surfaces lighter to white. Hind-wings white. Labial palpi projecting forwards more than twice the length of the head; second segment twice as long as third. Head with a conical prominence ending in a sharp point; underside of prominence flattened, the edge of the flat surface being slightly produced in front to a point directly beneath the other. Antennae serrate and finely ciliated. Genitalia (fig. 5).

♀. 29–32 mm. Similar to ♂ but fewer dusky brown scales on the fore-wings and the antennae simple. Genitalia (fig. 6).

Holotype ♂, allotype ♀, paratypes 1 ♂, 6 ♀♀. India: Punjab, Gurdaspur (*D. Nath*) 17–19.viii.36. In British Museum.

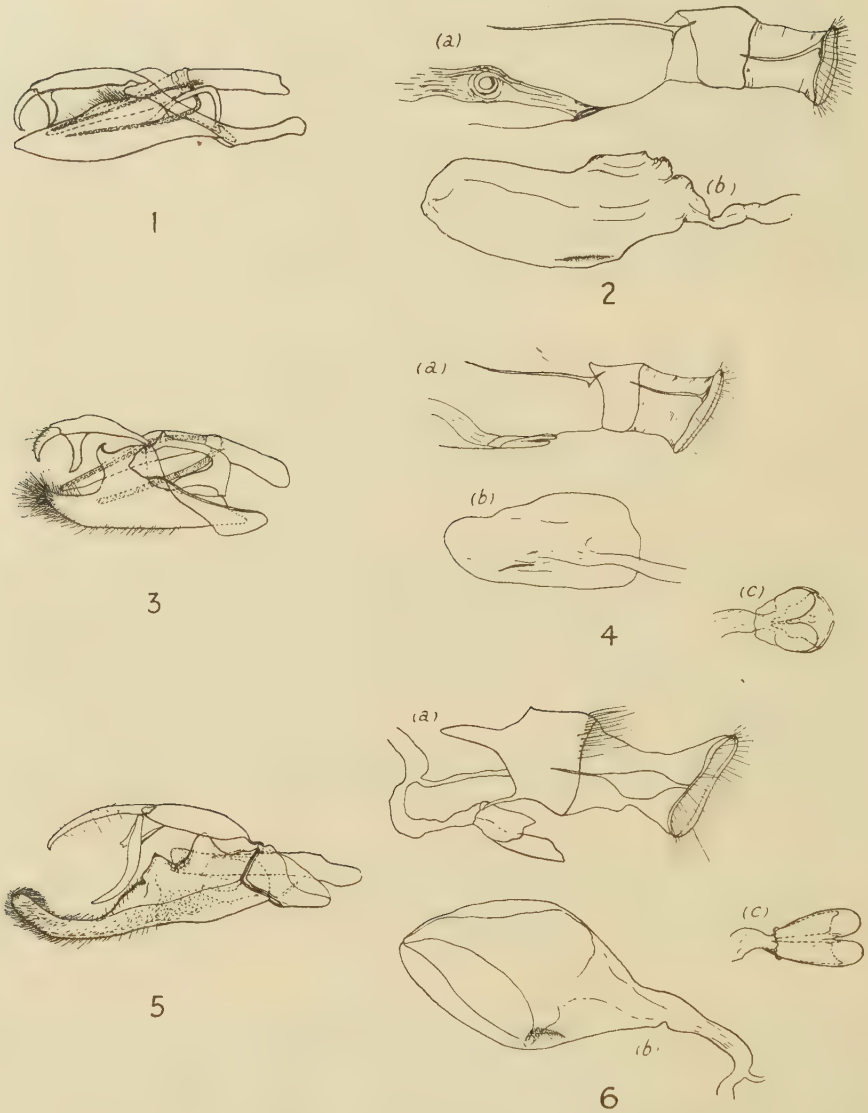


Fig. 1 *Chilo suppressalis* ♂ genitalia. Fig. 2, *Chilo suppressalis* ♀ (a) ovipositor and opening of ductus bursae, (b) bursa copulatrix showing signum. Fig. 3, *Chilo zonellus* ♂ genitalia. Fig. 4, *Chilo zonellus* ♀ (a) ovipositor and opening of ductus bursae, (b) bursa copulatrix showing signum, (c) sclerotised plate at opening of ductus bursae. Fig. 5, *Chilo trypetes* ♂ genitalia. Fig. 6, *Chilo trypetes* ♀ (a) ovipositor and opening of ductus bursae, (b) bursa copulatrix showing signum, (c) sclerotised plate at opening of ductus bursae.

BEITRÄGE ZUR KENNTNIS DER *BEMBIDION*-ARTEN DES FERNEN OSTENS (JAPAN, KOREA, OSTSIBIRIEN) (COLEOPTERA)

3. Mitteilung.[1]

Von Dr. Fritz Netolitzky.

Communicated by H. E. Andrewes, F.R.E.S.

The types of the new species described below are in H. E. Andrewes' collection.

Bembidion (Plataphodes) nuncaestimatum sp. n.

Von den nordeurasiatischen Arten (*B. difficile* Motsch., *fellmani* Mannh. und *aeruginosum* Gebl.[2]) ist eine in Japan vorkommende Art folgendermassen zu trennen und also zu charakterisieren:

Die Schulterbildung weist das Tier in die Untergattung *Plataphodes*, denn der abgekürzte Basalrand reicht bis zur vierten Furche der Flügeldecken. Dieser Basalrand ist aber in seinem Verlaufe nicht so deutlich abgeknickt oder geschwungen wie bei den zum Vergleiche dienenden Arten, sondern die gleichmässige Krümmung reicht bis zur Wurzel der fünften Furche, um dann in wenig veränderter Richtung zur Basis des vierten Streifens zu ziehen. Es ist also der vereinigte Seiten- und Basalrand ein fast gleichmässiges Bogenstück geworden, ähnlich wie beim Subgenus *Plataphus*, aber dennoch ist die Unterbrechung in der Richtung (unter den Binokular) deutlich wahrzunehmen.

Die tiefen und vollständigen Furchen der Flügeldecken sind nicht punktiert. Es unterscheidet sich *nuncaestimatum* in der Form, Skulptur und Färbung nicht wesentlich von den oben genannten Arten, nur besteht die Mikroskulptur der Flügeldecken aus enger gestellten Querlinien, während bei gleicher Vergrösserung bei *B. difficile* etc ein Netzwerk aus Maschen kenntlich ist. Farbe der Oberseite schwarz-oliv mit angedeutetem Blauschimmer der Flügeldecken. Länge 5–5·5 mm.

Fundort Japan: Oku Nikko Nebazawa 8.ix.1937 (*Y. Yano*), 2 Exempl.

Bembidion (Plataphodes) kuprianovi Mannh. **oxydatum** subsp. n.

Vor Jahren sah ich durch gütige Vermittlung von J. Sahlberg das einzige Stück "*P. kuprianovi* ♀ Kuprianoff Sitka" in der Coll. Mannerheim und ich konnte mit diesem mehrere Exemplare der Coll. Genova "Alaska, Wickham" gleichsetzen.

B. kuprianovi zeigt den für das Subg. *Plataphodes* charakteristischen abgekürzten, dabei mehr weniger winkelig abgesetzten und bis zur Basis der vierten Furche reichenden Basalrand der Schulter. Von allen zirkumpolaren[3] Arten verschieden ist die Färbung

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[1] 1938, *Proc. R. ent. Soc. Lond.* (B) **7**: 37; *ibidem*: 52.

[2] Vergl. Holdhaus, K., 1932, Die boreoalpinen Arten der Gattung *Bembidion* (*Soc. ent. Fr. Livre du Centenaire*: 353 ff.). Auch die zum Vergleiche dienenden Arten: *quadrifoveolatum, crenulatum* und *kuprianovi* sind von der japanischen Art verschieden.

[3] *Plataphodes*-Arten fehlen in Island und Grönland, daher richtiger "semicircumpolare" Verbreitung.

" antennarum basi tibiis tarsisque rufo-piceis "; auch die Flügeldecken haben einen bräunlichen Farbton, so dass man fast glauben könnte unausgefärbte Stücke vor sich zu haben, was aber nicht der Fall ist. Die Eiform der Flügeldecken ist auffallend, ebenso ihre vier fast grübchen-artigen Porenpunkte am dritten Streifen, von denen Mannerheim irrtümlich sagt, dass sie im dritten Zwischenraume liegen (" interstitio tertio punctis duobus impressis "). Richtig ist vielmehr, dass die Fühlborste knapp an der dritten Furche steht und dass nur die vergrösserten Grübchen in den dritten Zwischenraum reichen.

Mit *P. kuprianovi* ist *P. ovipenis* Motsch. gleichzusetzen, wie mich die Type Motschulsky's lehrte (*Mitt. Ges. Luxemb. Naturfr.* **1935** : 23), ebenso *B. bucolicum* Casey, von dem ich 2 Locotypen besitze (" Stikine River Cañon *B. C. Wickham* "). Casey hat das Tier in sein völlig unzureichend charakterisiertes Subg. *Lionepha* gestellt. Mit *kuprianovi* ist vielleicht auch *B. funereum* Lec. gleichzusetzen, doch muss ein Typenvergleich diese Vermutung erst bestätigen, weil tatsächlich ein sehr ähnlich gestaltetes und gefärbtes *Bembidion*, jedoch mit anderer, *Plataphus*-artiger Schulterbildung in verschiedenen alten Musealsammlungen unter diesem Namen aus Californien steckt.

Das aus Japan stammende, mit *kuprianovi* in Bezug auf Skulptur und Färbung nahezu gleichzusetzende Tier ist nur etwas kleiner (3·8–4·1 mm. gegen 4·5–5·0 mm.) und vor allen Dingen sind alle sieben Furchen der Flügeldecken wesentlich tiefer und bis ans Ende gleichmässig eingegraben, während *B. kuprianovi* nur eine sehr seichte Furchung aufweisst. Die Mikroskulptur der Flügeldecken besteht bei *kuprianovi* aus etwas deutlicheren Maschen als bei ssp. *oxydatum* (gleiche mikroskopische Vergrösserung vorausgesetzt).

Fundort Japan : Oku Nikko, Nebazawa 9.ix.1937 (*Y. Yano*), 2 Exemplare.

Synonymie : [1]*Bembidion* (*Plataphodes*) *kuprianovi* Mannh. (1843, *Bull. Soc. Nat. Mosc.* **16** : 217).

Bembidion (Trichoplataphus) taiwanum sp. n.

Wegen der Beborstung der Abdominal-Sternite gehört die neue Art zum Subgen. *Trichoplataphus* und wegen des ausgebildeten siebenten Streifens der Flügeldecken in die nächste Nähe des *B. proteron* Net. (1920, *Ent. Mitt.* **9** : 116). Von diesem ist als wesentlichster Unterschied nur hervorzuheben, dass der Halsschild der neuen Art 1½ mal so breit als lang ist und dadurch flacher erscheint, als der des *B. proteron*, welcher so lang als breit ist. Die Seitenrandkehle des Halsschildes von *B. taiwanum* ist viel breiter abgesetzt als bei *B. proteron*; sonst ist die Grösse, die Farbe, die Makro- und Mikroskulptur beider Arten identisch.

Fundort Formosa : near Mt. Ari Takasaki 29.xi.1937 (*Y. Yano*), 2 Exemplare.

Bembidion (Semicampa) mandarin sp. n.

Nach meiner Bestimmungstabelle des Subg. *Semicampa* (1922, *Wien. ent. Ztg.* **39** : 85–91) kommt man auf *B. guttulatum* Chd. und *gassneri* Net., denn der Halsschild ist vor den Hinterecken nicht ausgeschweift und die Flügeldecken sind auf ihrer ganzen Fläche gelb gefleckt und zwar nach dem *Notaphus*-Typus (wie etwa *B. varium* Ol., *fumigatum* Duft. oder *articulatum* Panz.).

[1] *B. ventricosum* Motsch., zu welcher Art ich früher in meinem Kataloge (und Csiki in dem seinen) *B. kuprianovi* als fragliches Synonym gestellt hatte, ist nach der gesehenen Type ein *Blepharoplataphus*, scheidet daher aus der Synonymie hier aus (Vergl. *Netolitzky* in *Mitt. Ges. Luxemburger Naturfr.* **1935** : 21).

Die neue Art unterscheidet sich von *B. guttulatum* durch die Kleinheit (3·2–3·5 mm.) und dadurch, dass die Mikroskulptur der Halsschildmitte und des Kopfes zwischen den Augen weniger deutlich ist. Die Färbung der Fühler, der Beine und der Flügeldecken ist wie bei *B. guttulatum*, im Gegensatze zu *B. gassneri*, welches fast ganz gelbe Fühler und heller gefleckte Flügeldecken besitzt.

Fundort MANCHUKUO: Harbin 12.viii.1937 (*S. Takagi*), 2 Exemplare.

Bembidion (Peryphus) amurense Motsch. **trajectum** subsp. n.

Anlässlich der Beschreibung des *B. lucillum* [1] erwähnte ich ein Tier, das dem *B. amurense* Motsch. sehr nahe steht. Es ist aber die Basis des Halsschildes bei der neuen Rasse etwas breiter als der Vorderrand (bei *amurense* etwa gleich breit) und nur das erste Fühlerglied ist hell (bei *amurense* sind $2\frac{1}{2}$ oder 3 Basalglieder licht).

Habitus eines *Peryphus* mit vor der Spitze eingedrücktem Metasternalfortsatz zwischen den Mittelhüften; Borsten der Abdominalsternite einfach. Neben dem Porenpunkte der Augen und den parallelen Stirnwüllsten finden sich winzige Pünktchen. Halsschild gewölbt, schwach herzförmig, in den rechtwinkligen Hinterecken je ein deutliches und langes Fältchen; Basis punktiert; die Seitenrandkehle sehr schmal (Gegensatz zu *pseudolucillum*). Flügeldecken mit sieben hinten erlöschenden, feinpunktierten Furchen und fast ebenen Zwischenräumen. Die Enden der Flügeldecken sind mässig zugespitzt. Die ganze Oberseite ist schwarzblau, während bei *B. amurense* die Flügeldecken dunkel Kastanienbraun sind. Beine und Fühler pechbraun, nur das erste Glied der Fühler heller. *Mikroskulptur*: Scheitel glatt, ebenso die Halsschildscheibe, während an den Rändern schattenhafte Maschen sind. Die Flügeldecken sind äusserst fein mikroskopisch quer gestreift. Grösse: 3·8–4·2 mm.

Fundort JAPAN: Kamagawa Keu, Sagamigawa 20.vi.1936 (*Y. Yano*), 6 übereinstimmende Exemplare; Ikuecho, Osaka, iii.1933, ein Exemplar (*Y. Yano*); Yodogawa ein *ex* Coll. Yano.

Das ähnliche *B. nikkoense* hat sehr grobe Punktreihen der Flügeldecken; letztere sind beim Männchen mikroskopisch glatt, während das Weibchen polygonale Maschen besitzt.

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[1] Vergl. 1938, *Proc. R. ent. Soc. Lond.* (B) **7**: 38.

Book Notice.

The Microscope and Entomological Monthly, Vol. 3, no. 1, January 1939. Price 1*s*. monthly.

Commencing with Volume 3 this journal, formerly known as *The Microscope*, includes in its wrapper a new journal entitled *The Entomological Monthly* [Vol. 1, no. 1]. The Editor for Entomology is E. F. Linssen and the publishers A. Barron Ltd. The aim of the journal is to bridge the gulf " between the publications of the learned societies and the occasional contributions in various popular journals."

Book Notice.

Rhopalocera Javanica. (Derde Gedeelte) Geïllustreerd Overzicht der Dagvlinders van Java door W. Roepke. 8vo. Wageningen (H. Veenman & Zonen) Publicatie van de Stichting " Fonds Landbouw Export Bureau 1916–1918," No. 22. pp. 235–362, pls. 26–36, figs. 30–53. Price Fl. 2.75.

This volume is the third of a work on Javan Butterflies. It deals with the Nymphalidae, including the genus *Acraea*.

Under each genus is found a key for the determination of Javan species and each species is dealt with individually. An abbreviated synonymy is given, followed by details of geographical distribution and a reference to the half-tone illustration given on the plates. This is followed by a general discussion, and in many cases a figure of the genitalia is given.

In addition to the half-tone plates of butterflies, this volume contains 2 coloured plates of larvae and pupae after originals by M. C. Piepers.

There is an apparent error in the numbering of the genera in this family, genus 16 *Hypolimnas* on p. 275 being followed by genus 16 [sic] *Doleschallia* on p. 282.